U.S. EPA, REGION 5
AUDIT OF
THE OHIO ENVIRONMENTAL PROTECTION AGENCY
UNDERGROUND INJECTION CONTROL PROGRAM
FOR CLASS I, IV, AND V WELLS
HELD JANUARY 25-27, 2000

EXECUTIVE SUMMARY

U.S. EPA granted primacy authority to the Ohio Environmental Protection Agency (Ohio EPA) in 1985 to regulate Class I, IV, and V injection wells in Ohio. Since that time, the U.S. EPA has maintained some level of oversight of state programs. The Ohio EPA receives approximately $130,000 in Federal funds each year to fulfill regulatory requirements and currently manages 12 Class I wells, any Class IV wells found, and over 10,000 Class V wells. The U.S. EPA then has a fiscal and legal obligation, as well as, an environmental responsibility to evaluate state progress.

On January 25-27, 2000, U.S. EPA, Region 5, sent a review team to Ohio Environmental Protection Agency's, Central Office in Columbus, Ohio to audit the state's UIC Program. The main purpose of the audit was to determine whether the state program meets base program and grant requirements and upholds the intentions of the Federal Safe Drinking Water Act to protect underground sources of drinking water from contamination by injection well activities. This final report highlights the results of the audit.

Overall, the Ohio EPA continues to operate a program that is consistent with the approved program given the resource limitations and challenges and complexities of the UIC program, more specifically for Class V. In addition, the state is on track toward meeting program objectives and current workplan commitments. We believe that our agencies have developed a true partnership over the years through technical exchange, information sharing, and coordination on national efforts and we look for this to continue. We also look for Ohio EPA management's continued support of the program especially given the anticipated workload for a number of program priorities including Quality Assurance Management Plan (QAMP), primacy package updates, and Class V obligations.

Our review identified a few areas that deserve attention. One issue of major importance is the need for further remedial actions at Spring Valley Frontier Campground and Caesar's Lake Mobile Home Park, two adjacent facilities with endangering Class V wells that pose an immediate threat to the Great Miami Sole Source aquifer which is used to supply drinking water to campground users and mobile park residents--mainly elderly people and visiting children. Other areas of focus include coordination with other programs, particularly the Division of Surface Water, regarding the new Class V rule requirements, especially as they relate to cesspools, drywells, or Class V wells where alternative environmentally sound disposal methods

are elusive; adequate enforcement deterrence for repeat violators; and state reporting. This report discusses these topics in further detail. We will work with state UIC staff regarding our findings and recommendations to identify future direction.

A. PROGRAM ADMINISTRATION

Funding:

Observations/Discussion: UIC is a small program of modest resources. In Ohio, Class I permit fees help to supplement Federal and state funds used to regulate Class I wells. For Class V, the state has minimal resources to regulate the large universe of wells and new rule requirements will tax existing Class V resources even further. The Region, unfortunately, does not anticipate future funding increases for the UIC program or, more specifically, for Class V. As such, the state must continue to be creative in their regulatory approaches by leveraging other resources and prioritizing key program implementation activities as discussed during our visit.

The U.S. EPA approved the Ohio EPA UIC program grant application for State Fiscal Year 2000 with a Federal award of $129,625. The state has received $32,475 which is 25% of the Federal Fiscal Year 1999 allotment as an early award to accommodate the State Fiscal Year 2000. Since our review, the project officer has informed us that the Ohio EPA accepted on February 27, 2000, 75% of the Federal Fiscal Year 2000 allotment that U.S. EPA awarded. The state stands to receive 75% of the Federal Fiscal Year 2000 allotment in the amount of $97,219 which the state had not received at the time of the review.

Recommendations/Conclusions: Funding levels are adequate for the Class I program largely due to Class I permit fees. Given resource limitations for Class V, the Ohio EPA realizes the importance of prioritizing efforts and should be sure to reflect their plans as part of the primacy package update that is due to the Region by December 29, 2000. As of January 28, 2000 the U.S. EPA awarded to Ohio EPA 75% of the Federal Fiscal Year 2000 allotment to cover State Fiscal Year 2000. The state now stands to receive 25% of the Federal Fiscal Year allotment as an early award to accommodate the State Fiscal Year 2001.

Primacy Program Update:

Observations/Discussion: The U.S. EPA and the state must work to update references to state programs at Part 147 of the Code of Federal Regulations. The Ohio EPA got off to an early start and has done an excellent job of moving things forward. As an example, the state has already began updating the program description. As another example, the state established coordination with their legal staff in early 1999 well before U.S. EPA finalized the new Class V rule on December 7, 1999 with an effective date of April 5, 2000. Ohio EPA legal staff identified a few minor modifications needed to make Ohio EPA's rule parallel Federal law. These changes

would have been needed in the absence of the National Class V regulation development effort and the U.S. EPA had not yet finalized the new Class V rule. As such, the Ohio EPA moved forward and finalized these minor rule changes on January 10, 2000, effective January 31, 2000. The process took 6 months, a timeframe to be considered since the Ohio EPA must repeat the same process to adopt the new rule requirements and update the entire primacy package in time to meet Regional and National schedules.

The Ohio EPA must now move to adopt the new Class V rule and apply for approval. To apply for approval, the Ohio EPA must submit three copies of a primacy package that reflects the updated program by December 29, 2000. A complete package includes a letter from the Governor requesting program approval; an Attorney General's Statement; a Memorandum of Agreement between USEPA and Ohio EPA; a complete Program Description and associated documents that describe how the State intends to carry out its responsibilities, including any shared responsibilities with the Ohio Department of Health for the Class V program; current copies of all applicable state statutes and regulations, including those governing state administrative procedures; and documentation showing proper public notice of the State's intent to seek approval. Our agencies need a schedule that outlines the steps and timeframes needed to get a final approved package. The Ohio EPA is taking full advantage of this opportunity to also remove obsolete language from their regulations.

Recommendations/Conclusions: Ohio EPA will send a draft schedule that outlines the steps needed to complete the primacy package update to the Region for review and incorporation of Federal responsibilities and activities. To facilitate approval, the state should continue to involve U.S. EPA during their efforts and submit any drafts to the Region for review as soon as they are available. The State's Attorney General's Statement will be the biggest hurdle. As such, both agencies should involve the appropriate legal staff early in the process. The Ohio EPA is moving forward as agreed and should continue in their commitment. State efforts to remove obsolete language from the regulations will help make the regulations more clear which is consistent with the Region 5's plain language initiative.

Staffing:

Observations/Discussion: The Ohio EPA's UIC program currently employs a Unit Supervisor, who is responsible for direction of the program, staff, and resources; and four geologists (one Geologist 4 and three Geologist 3's) who provide technical review of wells. One of the three Geologist 3's is a new hire and is scheduled for the necessary training. In addition to UIC staff, geologists in 5 district offices, a programmer specialist for computers, and a word processor provide assistance as needed.

Recommendations/Conclusions: The Ohio EPA has done an excellent job of keeping the program running smoothly during staffing turnovers. This is mainly due to hiring competent and

capable staff and the historical knowledge and contribution of senior UIC staff. The UIC Unit Supervisor is well aware of program workload; complex program challenges; staff needs, interests, and capabilities; and distributes resources and workload accordingly. New Class V rule requirements will tax existing staffing resources. The state will need to prioritize UIC activities particularly where Class V is concerned.

Training:

Observations/Discussion: The Ohio EPA is training staff according to their Professional Development Plans and program requirements. The new Geologist 3 is due to receive safety training which the Ohio EPA has scheduled. During the visit, Region 5 staff gave state technical staff a brief overview of the new computer program for pressure fall off tests. Ohio EPA staff, overall, needs additional training and occasional help in addressing pressure fall-off tests. The state has money available for training on pressure fall-off tests. Regional staff offered to help the state find an instructor for pressure transient test analysis training. In addition, Region 5 staff discussed plans to hold a 3 - 5 day training session on open-hole log analysis at the Regional Office in Chicago, Illinois. The state expressed interest in attending the session and offered as an alternative suggestion, if training was impossible, that the Region invite companies to bring and discuss their logging tools with staff.

Recommendations/Conclusions: The Region will follow-up as needed to help the state locate an instructor to provide training on pressure transient test analysis. The Region will also update the Ohio EPA on those training opportunities that meet state needs. The Region will offer open-hole logging training on May 2-4, 2000 at our office in Chicago. We encourage the state to send as many UIC technical staff to this training as the state's travel budget permits.

Quality Assurance Management Plan:

Observations/Discussion: Both our agencies are working to have an approved QAMP covering the UIC program by June 30, 2000. The Region has provided comments and await the state's response. The state indicated that they would be in a position to respond some time in March and would have more information on their approach after a planned meeting with state QA and program staff. The state did mention that they need clarification on several items, specifically on who the QA manager should be under the individual UIC program QAMP. Depending on the activity, the QA manager could be the Unit Supervisor or an independent reviewer outside of the program. The Region requested feedback from the state on the QAMP process. Two major observations were that USEPA guidance is too broad, and the state often receives confusing and conflicting messages from USEPA. The state is struggling to meet the Region's QAMP requirements along with other pressing program priorities.

Recommendations/Conclusions: The state needs to respond to the Regional comments on their draft QAMP. Both agencies should make every effort to get an approved UIC QAMP in place by June 30, 2000.

Data Management:

Observations/Discussion: The Ohio EPA manages 12 Class I well files, a Class I well database, and thousands of Class V well records. The state needs to sort a number of Class V wells into the appropriate sub-categories. The state realizes this is a time intensive but necessary effort. The state is continuing efforts to develop a Class V database and get it up and running. The database is key given the number and variety of Class V wells that the state must address. The current inventory is expected to increase and will become more complicated to manage under the new Class V rule. The database will make it easier for the Ohio EPA to sort and review Class V data, and thus, better manage the universe of Class V wells. The state has included ground water data elements, mainly GPS coordinates, in their plans for the database and this will further help the state manage high priority well types.

Recommendations/Conclusions: Overall the state maintains an adequate paper trail of individual well activities. Efforts to develop the Class V database have been ongoing for quite some time. Ohio EPA management should push for support of this effort to complete it. For those Class V wells on the inventory that need to be categorized, state staff will need to field verify whether wells exist, assess potential endangerment, and document accordingly. The approved QAMP should help to further ensure data quality.

State Reporting:

Observations/Discussion: The state timely submits all necessary documentation meeting regional and grant schedules. The Region relies on the state to report program activities mainly through OMB approved 7520 forms, progress reports and/or self evaluations, and well inventory. The Region submits this information to Headquarters to become part of national UIC program data. It is important that the data reported accurately reflects the level of effort for the Ohio EPA UIC program.

The review team discovered some discrepancies on the 7520 forms and the well inventory for FY 1999. Discrepancies with the 7520 forms made it difficult for the Region to follow permitting, compliance, and enforcement activities of the Ohio EPA. For example, the state reported six Class I wells with SNC violations, but only identified five SNC violations (one mechanical integrity SNC violation, and four other SNC violations). As another example, the forms indicate that Ohio EPA issued eight permits for existing Class I injection wells. Our records indicate that out of the12 injection wells, permits for four Class I wells at BP are currently in draft, permits for four wells at Vickery Environmental formerly Waste Management of Ohio formerly ChemWaste

Management are expected to be issued draft in the spring, permits for two wells at AK steel cannot be proposed due to pending non-UIC enforcement actions, and permits for two wells at the Zeneca facility are current and the Ohio EPA issued these permits a few years ago. As for the well inventory, the total count of Class V wells was off by a few wells.

The state indicated, and the Region agrees, that the 7520 forms can be confusing and are difficult to complete overall. In addition, the Ohio EPA was unaware of the current definition of SNC for Class I wells and was treating all Class I violations as SNC. This may have further distorted reported data. The Region provided a copy of the current Class I SNC Redefinition to Ohio EPA. Region 5 staff also agreed to provide a WordPerfect table of the 7520 forms which may help guide the state when completing the 7520 forms. Currently, a National effort is underway to revise the 7520 forms so that programs report more meaningful data and the forms are easier to complete. The state has participated in this effort.

Recommendations/Conclusions: We encourage the state to continue active participation on the National 7520 Revisions Work Group. Until revisions to the 7520 forms are final, the state should continue current reporting mechanisms. The state should be sure to check math on the well inventory numbers. The state should also use the current SNC definition when completing the 7520 forms. Region 5 staff has forwarded the WordPerfect file of the 7520 chart to the state. The Ohio EPA should take steps to ensure that the data reported on the 7520 forms is accurate and contact the Region if there are uncertainties.

Pollution Prevention:

Observations/Discussion: The Ohio EPA UIC Unit coordinates with their Pollution Prevention Office as needed and looks for opportunities to integrate pollution prevention into program activities. Valerie Orr, Class V coordinator, is the UIC representative on a Division workgroup formed to evaluate interaction with customers and integrate pollution prevention into program activities accordingly. The workgroup also serves to facilitate coordination on pollution prevention efforts across programs. The pollution prevention focus on Class V is appropriate because there is more of a need in this area to reduce rather than transfer waste streams due to limited alternatives to and solutions for Class V waste disposal. While the main focus is on Class V, the unit also addresses pollution prevention at Class I facilities. Class I operators submit pollution prevention forms and are on a pollution prevention plans and/or have sought ways to recycle some of the waste stream.

Recommendations/Conclusions: The state is on target and should continue pollution prevention efforts.

Education and Outreach

Education and outreach is a key component of the UIC program, especially for Class V. The state provides information and assistance to the regulated community, internal and external programs and organizations, interest groups, and the general public. They meet with operators to discuss compliance concerns. They field and log phone calls, respond to information requests and requests for assistance, interact with local officials and consultants, and are working to improve the Ohio UIC website. The website will be a key outreach component particularly for Class V with the advent of the new regulations. The state has attended citizen meetings which helps the state to get a community perspective on UIC issues. The state plans to work through the Division Office Liaison to other agencies on outreach initiatives. Initiatives include ways to roll-out new rules and work with the Environmental Health Association on outreach. The state has conducted seminars and outreach projects and distributed printed materials to educate target audiences on improperly managed Class V wells. Ohio EPA staff have also attended a citizens meeting to discuss Vickery Environmental, a Class I facility.

Recommendations/Conclusions: The Ohio EPA has always been strong in this area particularly where it concerns Class V. We look forward to the update on the Ohio UIC webpage. Our agencies can share ideas, outlines, and information on website content.

B. PERMITTING

Class I Facilities

Observations/Discussion (Overall): Ohio EPA, UIC staff reports that there have been few inquiries concerning the construction of Class I wells, with the exception of possible well construction at existing UIC facilities. It appears unlikely, at this time, that the State will receive additional permit applications for new wells. The review focused mainly on permitting needs for existing wells. Our review did not uncover any wells in the area of review or wells drilled to depths of concern, deficient in closure, or requiring corrective action, consistent with Ohio EPA's findings. The review team looked at several well files which are discussed below.

Overall, it is evident that the Ohio EPA has a solid, comprehensive permitting program. The state consistently provides copies of draft permits to the appropriate Region 5 staff and keeps the Region involved and abreast of permit activities. The Ohio EPA uses USEPA and regional guidance, particularly MIT guidance, where applicable, and increases requirements where needed. The state oversees well closures and had one in 1999. The closure complied with approved rule permit and closure plan requirements and will reduce the permitting workload. The Ohio EPA encourages pollution prevention, waste minimization and treatment and includes the respective language in the Class I permits. The Ohio EPA is in the process of contracting to have the seismic reflection survey from the various Class I UIC facilities transferred from tapes

to CD Rom which will save space and better preserve data. The permitting program has been very active.

Observations/Discussion (BPCI): On January 4, 2000 Ohio EPA issued draft permits for the four Class I wells at BP Chemicals, Inc. The permit addresses changing conditions at the BPCI facility. The company intends to add an additional line and there is some concern about disposal capacity due to continued pressure increases. The changes in injected volumes and waste constituents are not expected to be very significant due to increased efficiency. The Ohio EPA held a public meeting on February 10, 2000 regarding the BPCI permits and received no adverse comments. Our review of the draft permits for the BPCI facility uncovered no immediate environmental concerns but had questions regarding compatibility and reaction of the old waste stream with the new catalyst and potential corrosion of the injection zone as a result. The permit process is still in stages where the Ohio EPA can raise this issue and request more data if needed. The state agreed to investigate this matter and get back to U.S. EPA. The Ohio EPA expects to finalize these permits very soon.

Observations/Discussion (AK Steel): The AK Steel facility is operating under expired permits because unresolved, non-UIC environmental violations exist. Ohio law prevents the issuance of permits in such a situation.

Observations/Discussion (Cargill): In October, 1999, Cargill plugged the Class I well which Akzo Nobel had used to dispose of seep water in its underground salt mine. The well had been operated on an expired permit by Akzo for several years because of unresolved UIC enforcement issues. Before it was plugged, the well was logged using temperature, cement bond, and casing inspection logging tools. Based on log results, the casing appeared to be in very poor condition, the cement appeared to be intact although the returns were a little fuzzy, and the temperature log did not indicate any leakage either upward or out of leaks in the casing. The Ohio EPA has determined that there is no evidence of ground water contamination caused by the injection well and no further action is required. This determination is consistent with our findings.

Observations/Discussion (Vickery Environmental): The existing permits for the four wells at Vickery Environmental (formerly Waste Management of Ohio) expired on July 5, 1999. Chuck Lowe is working to reissue these permits and drafts should be available in April, 2000. The name of the facility will be changed to Vickery Environmental, Inc. some time after March 31.

The facility has had no violations during the year, and the Ohio EPA continues to investigate anomalies which Ohio EPA staff identified in late 1997 from temperature logs. These anomalies indicated potential fluid movement out of the injection zone. In early 1998, Ohio EPA and Waste Management of Ohio agreed on a process for additional testing to investigate the anomalies. A series of temperature logs were run in 1998 and did not show any apparent recent upward fluid movement. In 1999, additional testing was conducted, which seemed to indicate no

apparent fluid movement out of the injection zone. The question of timing of waste movement was not unequivocally demonstrated. The situation continues to be monitored for possible problems.

Recommendations/Conclusions: Technical exchange with Region 5 in this area has proved to be valuable and we look for this to continue. The Ohio EPA runs a conscientious Class I permitting program and produces high-quality permits. Because the Agency has sufficient Class I resources, it is usually possible for permits to be issued timely, although circumstances may prevent this. The Ohio EPA permits meet technical and regulatory standards, set adequate conditions, and define compliance expectations. The Region looks forward to receiving draft permits for the Vickery facility. The Ohio EPA provided comments to U.S. EPA which clarifies the issue of waste stream compatibility at BPCI and sufficiently address Region 5 concerns.

Land Ban Coordination:

Observations/Discussions: The USEPA has issued exemptions from the restrictions placed on the land disposal of hazardous wastes by the Hazardous and Solid Waste Amendments of 1984 to the Resource Conservation and Recovery Act to three facilities operating Class I wells in Ohio. The exemptions contained conditions which are necessary for the demonstrations that the hazardous wastes injected will remain in the injection zones for as long as they remain hazardous. These conditions have been incorporated into the permits issued by Ohio EPA for the exempted facilities. Land ban facilities monitor normal injection well operations and report results to the Ohio EPA. The reporting of information to the Ohio EPA ensure that the demonstrations do remain valid. Ohio EPA has not reported any occurrences which would indicate that the wells at the exempted facilities have operated outside the permit limits.

In addition, periodic sampling and analysis of ground water pressures and chemistry at the Waste Management of Ohio site are required by the exemption and the Ohio EPA permits. Information gathered through the sampling and analysis is provided to Ohio EPA and Region 5. In the past, there have been discussions about the results of the monitoring. It is probably time that both agencies review the accumulated information and determine whether there is evidence of fluid movement out of the permitted injection zone.

Recommendations/Conclusions: Information exchange should continue in this area.

C. Compliance Monitoring/Assistance and Compliance/Enforcement

Compliance Monitoring & Assistance:

Observations/Discussions (General): Ohio EPA routinely reviews the monthly operating reports for the 12 Class I wells, identifies potential permit violations from the monthly operating reports,

and follows up on potential violations identified from their review in a timely manner. An example of this is with the AK Steel situation discussed in this report. The Ohio EPA visits each facility quarterly, witnesses all testing, and continues to conduct very detailed annual inspections of the 12 Class I wells. These inspections include full compliance reviews. The Ohio EPA considers virtually every permit condition. In addition to collecting information in the field, state staff reviews records in the office prior to the inspection to ensure that the inspector is intimately familiar with any recent developments at the facility to be inspected. The inspection includes an interview with the manager in charge of the well's operation to check whether all events which are relevant to the well's operation have been reported. The inspector witnesses complete tests of the monitoring and alarm systems. State staff reviews monitoring records and compares them with reports which the operator has submitted to the Ohio EPA to ensure that periodic reports reflect measured values. The Ohio EPA did not receive any complaints about Class I wells which needed any follow-up. Regarding sampling and quality assurance, the agency has not taken any samples. The Class I facilities have good quality assurance plans for sampling and other data collection activities. The Ohio EPA requires operators to sample the injected waste streams and submit the results quarterly.

Observations/Discussions (MIT): The state is following required test frequencies to determine the mechanical integrity of Class I injection wells. Part 1 for leaks is conducted annually and Part 2 for fluid migration is conducted every 3 years. The Ohio EPA reviews testing plans required by permit prior to testing to assure methods are appropriate. Operators used approved methods and all Class I injection wells passed their mechanical integrity tests. The Ohio EPA field witnessed 100% of mechanical integrity testing.

Recommendations/Conclusions: Field presence is definitely one of the Ohio EPA's strong points. The state is very thorough and diligent in their efforts to monitor injection well facilities for compliance.

Compliance and Enforcement:

Observations/Discussions (General): The review team looked at several Class I well files including inspection results, monitoring reports, and enforcement actions. For violations identified during compliance monitoring activities, the Ohio EPA generally resolved the identified violations with either a telephone call with notes documented in the file, or combined notice of violation and return to compliance letter without penalties. The Ohio EPA lacks unilateral penalty authority for monetary deterrence at this level. The review team was unable to determine escalated enforcement activity beyond notice of violation. Two companies showed patterns of repeat non-compliance. The specific details follow.

Observations/Discussion (AK Steel): Ohio EPA has informed AK Steel on three instances over the past year that there were problems with the monthly operating report data that AK Steel

submitted to the Ohio EPA, specifically the September 1998, November 1998, and July 1999 monthly operating reports. AK Steel certified in their September 1998 monthly operating reports that a power failure occurred from 10:30 p.m. on September 26, 1998, to 2:30 a.m. on September 27, 1998, but they maintained positive annulus pressure differential greater than 50 psi on well #2 during the outage. During a telephone conversation between Ohio EPA and AK Steel on October 27, 1998, AK Steel also reported that due to the other problems created with the power outage, AK Steel did not have anyone in the wellhouse to check the wells per AK Steel's backup procedures.

During a semiannual inspection at AK Steel on November 17, 1998, the Ohio EPA reviewed the circle charts for well #2 covering a power outage. This review indicated that, based on the circle charts, the annulus pressure was at 0 psi for at least 15 minutes on September 27, 1998.

During a telephone conversation on January 4, 1999, AK Steel stated that they believed that the pressure differential had been maintained because past history showed that the well goes on a vacuum and that the annular fluid column had been maintained. On January 7, 1999, AK Steel submitted a calculation to Ohio EPA which AK Steel said shows that a positive pressure differential was maintained during the power outage on September 26 and 27, 1998. This mathematical calculation was based upon AK Steel's most recent pressure fall-off test and demonstrated the probability that the minimum pressure differential was greater than 50 psi during the power outage.

On January 13, 1999 Ohio EPA sent a letter to AK Steel stating that despite the apparent loss of annulus pressure, there was no threat to the environment because company personnel verified that injection had ceased, the well was shut in, and a positive pressure differential was maintained.

On January 4, 1999, Ohio EPA contacted AK Steel by telephone in reference to questions on the 11/98 monthly operating reports. Injectate volumes for both wells did not agree. The injectate volumes were quoted in two different places in the report with two different numbers for volumes. AK Steel in turn submitted corrected monthly operating reports.

On September 8, 1999, Ohio EPA contacted AK Steel by telephone in reference to the July, 1999 monthly operating reports. MIT testing dates were wrong, and measurements on the summary sheet indicate that the wells were off, but other data shows injection. AK Steel provided a corrected report containing the correct MIT dates, and an explanation that summary sheets were a snapshot in time and not intended to indicate a total activity picture, that is what the data sheets are for.

Observations/Discussion (BP Chemicals): BP Chemicals Inc. reported three instances over a period of seven months, in which the pressure differential between the annulus system and the

injection tubing fell below the required 50 psi differential. The specific causes were different from each other, but the failure of maintenance workers to maintain the differential was responsible for the violations in each case. Ohio EPA responded in the first two cases by issuing combined notices of violation and return to compliance letters because these seem like isolated instances which were quickly remedied. The third violation occurred on December 28, 1999, and no action had yet been taken. BPCI has told the Ohio EPA that it is exploring ways to prevent future violations of this kind. The Ohio EPA strongly recommended additional training for maintenance workers and other pertinent company staff and requested that BPCI submit staff qualifications.

Recommendations/Conclusions: In general, from the files reviewed, the rate of compliance among Class I permitees appears to be high. As discussed in the State reporting section, it is hard to determine general compliance rates, though, due to the inconsistencies identified in the 7520 reports submitted by the Ohio EPA.

In the case of AK Steel, the lack of adherence to AK Steel's backup procedures during the September 1998 power outage, as well as the apparent pattern of inaccuracies in the monthly operating reports for the months of September 1998, November 1998, and July 1999 deserves some attention. If such inaccuracies continue to occur, the OEPA should implement an escalated enforcement response, with possible stipulated penalties if appropriate.

In the case of the violations at BP Chemicals, the three repeat violations which occurred over a period of seven months did not cause any endangerment of the environment but does deserve some additional attention as well. BP management has indicated to the Ohio EPA that it is taking steps to reduce the possibility of recurrence. If such repeat violations continue to occur, then the Ohio EPA should implement an escalated enforcement response, with possible stipulated penalties if appropriate.

Close attention is needed by the Ohio EPA to ensure that repeat non compliance patterns like the ones identified above are dealt with in an appropriate manner, and in accordance with their enforcement response policy. Region 5 is willing to assist the Ohio EPA with Federal enforcement at AK Steel, or BPCI, if necessary, and encourages the Ohio EPA to call upon us for enforcement actions at any Class I or Class V facility.

D. CLASS IV/V

1. Class IV

Observations/Discussion: State staff works in concert with other programs and district offices to help identify and address Class IV well situations. These programs include the Division of Emergency Response and Remediation (DERR) regarding remedial activities and the Division of

Hazardous Waste Management on Class IV wells. The state has not reported any new Class IV well cases.

Recommendations/Conclusions: The cross communication with DERR and district staff is essential in dealing with Class IV wells. We expect the state will continue these efforts.

2. Class V

Class V Activities:

Observations/Discussion: The Ohio EPA Class V coordinator, Valerie Orr, is renowned nationally for her work in Class V and has done exceptionally well with the limited resources available for Class V. Ms. Orr provided valuable support and brought program experience to the development of the new Class V rule. We commend her outstanding performance.

The Ohio EPA added 918 Class V wells to their inventory during FY 1999 and part of FY 2000. A citizen complaint regarding the City of Trenton led to the identification of 400 stormwater drainage wells in this area. Industrial wells and complaint investigations are top priority for the state in doing Class V inspections. The state plans to prioritize wells for future action and will work with other divisions to focus on industrial wells and other wells which threaten USDWs. The state has issued area permits for remedial Class V wells and closed nine Class V wells in August (eight of which were automotive). The state has issued NOVs without penalty for Class V inventory requirements mainly in dealing with small entities with no resources. The state sends permit or close letters to Class V well facilities identified that have not submitted well inventory. The state has trained and informed district staff about Class V. The Unit coordinates with source water assessment and protection staff on needed inventory, assessment and enforcement actions in the vicinity of public water supplies. The state reviews closure plans for Class V wells and witnesses closures as resources allow. Through an MOA, the Surface Water Division must notify the UIC Unit of any wells identified and provide a current inventory of large septic systems. The Region gave the Ohio EPA a draft of the Class V strategy as a blueprint of where the Region is headed with Class V implementation.

Spring Valley Frontier Camp Ground/Caesar's Lake Mobile Home Park:

Observations/Discussion: These adjacent facilities, located in Warren County, near Dayton, Ohio, have endangering Class V wells used for domestic wastewater/sewage disposal. The Class V wells are located in proximity to the drinking water wells for these facilities. Both facilities have their own public water supply well of which both have exceeded MCLs for nitrates. In addition to the Class V wells, the Ohio EPA indicated that other potential sources of nitrates are located near the drinking water wells. These other sources include a bulk fertilizer plant, sewage sludge application fields, and fertilizers used on or stored on adjacent farm fields. Spring Valley

Frontier Camp Ground received an emergency loan to construct a new drinking water well. The sites are located along the East Fork of the Little Miami River, are in a sole source aquifer area, and mainly services elderly and at a minimum visiting children. The plume from the Class V wells took 30 years to move 100 feet deep and 200 feet out and may still be moving. Ohio EPA Ground Water staff conducted a detailed investigation as to the potential cause for the MCL exceedances in 1994 but the data was inconclusive. The geology of the area consists of sand and gravel glacial outwash overlying Upper Silurian Bedrock.

While the Southwest District Office of the Ohio EPA have been aware of problems at the facility since 1994, the UIC Unit did not become aware of the problem until 1998, and then began to address it. The state notified the facilities about UIC requirements and requested information regarding such items as discharge rates, system design, and waste constituents. Most of the information has been obtained and the UIC Unit is coordinating with the Division of Surface Water to help the Class V well owners find alternatives for waste disposal. The owners have joined efforts in their attempts to comply with UIC requirements. The UIC Unit is looking at good faith effort and met with the facilities and their contractors on February 10, 2000 to find a solution along with other pertinent Ohio EPA district and Division of Surface Water staff. Finding the best solution for this situation may not be easy. The amount of fluid injected into all the endangering Class V wells is a total of 10 to 15 thousand gallons per day. There are issues with both the capability of receiving streams to accept any surface discharge due to anti-degradation and TMDL standards (the Little Miami River is a scenic river), and the land area which would be required for an alternative land application system. It will be necessary for all parties to work together to find a timely solution that eliminates the ground water contamination without simply transferring the problem to another medium.

Recommendations/Conclusions: Per our request, the Ohio EPA sent an update to Region 5 staff following the state's February 10, 2000 meeting with the facility owners and have since participated on a conference call with Region 5 staff to help to clarify and address U.S. EPA Region 5 drinking water and UIC concerns about the facility. Based on information provided by the Ohio EPA, drinking water concerns at these facilities are being addressed and the Ohio EPA is seeking viable alternative methods of waste disposal for the sanitary wastes. The Region will continue to monitor this situation until more permanent solutions are found. The Region views the Class V wells on site as a threat to the ground water below and should be closed. The fact that these wells are only covered by wooden slats and thus vulnerable to forms of disposal other than the sanitary wastes from the septic system further compound the situation. The Region strongly recommends a tight consent agreement with penalties and an enforceable schedule for these facilities to help ensure a timely resolution.

City of Trenton:

Observations/Discussion: It took 6 months for the city to provide the inventory information requested for all wells they own and operate. The state is following up and getting additional information.

Recommendations/Conclusions: At this time, there appears to be no immediate endangerment to USDWs from the wells owned by the city of Trenton.

New Class V Rule Adoption:

Observations/Discussion: Even though the new regulations provide additional new standards, the Ohio EPA wants to be careful not to adopt Class V rules in a vacuum. Coordination is essential and should be established. The state has been looking at the new Class V rules and is putting together a first draft that incorporates new Class V rules into the Ohio Administrative Code. In addition to adding the new Class V requirements, the Ohio EPA is deleting Class I and IV well provisions allowing operation of the wells by rule. These provisions have been non-applicable for almost 16 years and need to be removed to prevent any confusion. The Ohio EPA will also add a rule requiring Class I well permit applicants to provide the results of a seismic reflection survey with the permit-to-operate. This new rule is required by Ohio law. The Ohio EPA will also consolidate present Class V provisions into fewer rules to provide less confusion to the regulated public. John Taylor gave an update on the new Class V rule and discussed future direction for Phase II where focus may be on industrial wells. We discussed the role of the Department of Public Health in the regulation of large septic systems, cesspools, and drain fields which the rule clearly establishes as Class V wells. The Ohio EPA has reviewed the proposed Ohio Department of Health rules for home sewage systems and recommended the banning of cesspools be included with those rules for systems serving two and three family residences. Ohio EPA recommended the cesspool ban language within the Federal rule with all relevant definitions. An MOU with the Department of Health appears necessary. For those systems where the Ohio Department of Public Health, usually through County Health Departments, has no jurisdiction, authority falls with the surface water/waste water program. The Ohio EPA Division of Surface Water reviews systems with a capacity of 20 or more, mainly semi-public commercial or non-residential. Whatever approach the Ohio EPA chooses, the state will need to thoroughly outline and document who will regulate what and how in the rule adoption package. A flow-chart of who will regulate what systems is recommended. The Ohio EPA may soon have an opportunity review the Department of Health's home sewage rules which may impact Class V. Comments are due the first week in February. The Ohio EPA wants to be sure all affected rules make it clear which types of systems are banned. The Region will host training on the new regulations and primacy package updates in February. Key Class V staff will attend as well as a representative for the Ohio ground water/source water program. Health Departments are welcome at the training. The UIC Unit gave a presentation to the State Coordinating Committee

U.S. EPA, REGION 5
AUDIT OF
THE OHIO ENVIRONMENTAL PROTECTION AGENCY
UNDERGROUND INJECTION CONTROL PROGRAM
FOR CLASS I, IV, AND V WELLS
HELD JANUARY 25-27, 2000

EXECUTIVE SUMMARY

U.S. EPA granted primacy authority to the Ohio Environmental Protection Agency (Ohio EPA) in 1985 to regulate Class I, IV, and V injection wells in Ohio. Since that time, the U.S. EPA has maintained some level of oversight of state programs. The Ohio EPA receives approximately $130,000 in Federal funds each year to fulfill regulatory requirements and currently manages 12 Class I wells, any Class IV wells found, and over 10,000 Class V wells. The U.S. EPA then has a fiscal and legal obligation, as well as, an environmental responsibility to evaluate state progress.

On January 25-27, 2000, U.S. EPA, Region 5, sent a review team to Ohio Environmental Protection Agency's, Central Office in Columbus, Ohio to audit the state's UIC Program. The main purpose of the audit was to determine whether the state program meets base program and grant requirements and upholds the intentions of the Federal Safe Drinking Water Act to protect underground sources of drinking water from contamination by injection well activities. This final report highlights the results of the audit.

Overall, the Ohio EPA continues to operate a program that is consistent with the approved program given the resource limitations and challenges and complexities of the UIC program, more specifically for Class V. In addition, the state is on track toward meeting program objectives and current workplan commitments. We believe that our agencies have developed a true partnership over the years through technical exchange, information sharing, and coordination on national efforts and we look for this to continue. We also look for Ohio EPA management's continued support of the program especially given the anticipated workload for a number of program priorities including Quality Assurance Management Plan (QAMP), primacy package updates, and Class V obligations.

Our review identified a few areas that deserve attention. One issue of major importance is the need for further remedial actions at Spring Valley Frontier Campground and Caesar's Lake Mobile Home Park, two adjacent facilities with endangering Class V wells that pose an immediate threat to the Great Miami Sole Source aquifer which is used to supply drinking water to campground users and mobile park residents--mainly elderly people and visiting children. Other areas of focus include coordination with other programs, particularly the Division of Surface Water, regarding the new Class V rule requirements, especially as they relate to cesspools, drywells, or Class V wells where alternative environmentally sound disposal methods

are elusive; adequate enforcement deterrence for repeat violators; and state reporting. This report discusses these topics in further detail. We will work with state UIC staff regarding our findings and recommendations to identify future direction.

A. PROGRAM ADMINISTRATION

Funding:

Observations/Discussion: UIC is a small program of modest resources. In Ohio, Class I permit fees help to supplement Federal and state funds used to regulate Class I wells. For Class V, the state has minimal resources to regulate the large universe of wells and new rule requirements will tax existing Class V resources even further. The Region, unfortunately, does not anticipate future funding increases for the UIC program or, more specifically, for Class V. As such, the state must continue to be creative in their regulatory approaches by leveraging other resources and prioritizing key program implementation activities as discussed during our visit.

The U.S. EPA approved the Ohio EPA UIC program grant application for State Fiscal Year 2000 with a Federal award of $129,625. The state has received $32,475 which is 25% of the Federal Fiscal Year 1999 allotment as an early award to accommodate the State Fiscal Year 2000. Since our review, the project officer has informed us that the Ohio EPA accepted on February 27, 2000, 75% of the Federal Fiscal Year 2000 allotment that U.S. EPA awarded. The state stands to receive 75% of the Federal Fiscal Year 2000 allotment in the amount of $97,219 which the state had not received at the time of the review.

Recommendations/Conclusions: Funding levels are adequate for the Class I program largely due to Class I permit fees. Given resource limitations for Class V, the Ohio EPA realizes the importance of prioritizing efforts and should be sure to reflect their plans as part of the primacy package update that is due to the Region by December 29, 2000. As of January 28, 2000 the U.S. EPA awarded to Ohio EPA 75% of the Federal Fiscal Year 2000 allotment to cover State Fiscal Year 2000. The state now stands to receive 25% of the Federal Fiscal Year allotment as an early award to accommodate the State Fiscal Year 2001.

Primacy Program Update:

Observations/Discussion: The U.S. EPA and the state must work to update references to state programs at Part 147 of the Code of Federal Regulations. The Ohio EPA got off to an early start and has done an excellent job of moving things forward. As an example, the state has already began updating the program description. As another example, the state established coordination with their legal staff in early 1999 well before U.S. EPA finalized the new Class V rule on December 7, 1999 with an effective date of April 5, 2000. Ohio EPA legal staff identified a few minor modifications needed to make Ohio EPA's rule parallel Federal law. These changes

would have been needed in the absence of the National Class V regulation development effort and the U.S. EPA had not yet finalized the new Class V rule. As such, the Ohio EPA moved forward and finalized these minor rule changes on January 10, 2000, effective January 31, 2000. The process took 6 months, a timeframe to be considered since the Ohio EPA must repeat the same process to adopt the new rule requirements and update the entire primacy package in time to meet Regional and National schedules.

The Ohio EPA must now move to adopt the new Class V rule and apply for approval. To apply for approval, the Ohio EPA must submit three copies of a primacy package that reflects the updated program by December 29, 2000. A complete package includes a letter from the Governor requesting program approval; an Attorney General's Statement; a Memorandum of Agreement between USEPA and Ohio EPA; a complete Program Description and associated documents that describe how the State intends to carry out its responsibilities, including any shared responsibilities with the Ohio Department of Health for the Class V program; current copies of all applicable state statutes and regulations, including those governing state administrative procedures; and documentation showing proper public notice of the State's intent to seek approval. Our agencies need a schedule that outlines the steps and timeframes needed to get a final approved package. The Ohio EPA is taking full advantage of this opportunity to also remove obsolete language from their regulations.

Recommendations/Conclusions: Ohio EPA will send a draft schedule that outlines the steps needed to complete the primacy package update to the Region for review and incorporation of Federal responsibilities and activities. To facilitate approval, the state should continue to involve U.S. EPA during their efforts and submit any drafts to the Region for review as soon as they are available. The State's Attorney General's Statement will be the biggest hurdle. As such, both agencies should involve the appropriate legal staff early in the process. The Ohio EPA is moving forward as agreed and should continue in their commitment. State efforts to remove obsolete language from the regulations will help make the regulations more clear which is consistent with the Region 5's plain language initiative.

Staffing:

Observations/Discussion: The Ohio EPA's UIC program currently employs a Unit Supervisor, who is responsible for direction of the program, staff, and resources; and four geologists (one Geologist 4 and three Geologist 3's) who provide technical review of wells. One of the three Geologist 3's is a new hire and is scheduled for the necessary training. In addition to UIC staff, geologists in 5 district offices, a programmer specialist for computers, and a word processor provide assistance as needed.

Recommendations/Conclusions: The Ohio EPA has done an excellent job of keeping the program running smoothly during staffing turnovers. This is mainly due to hiring competent and

capable staff and the historical knowledge and contribution of senior UIC staff. The UIC Unit Supervisor is well aware of program workload; complex program challenges; staff needs, interests, and capabilities; and distributes resources and workload accordingly. New Class V rule requirements will tax existing staffing resources. The state will need to prioritize UIC activities particularly where Class V is concerned.

Training:

Observations/Discussion: The Ohio EPA is training staff according to their Professional Development Plans and program requirements. The new Geologist 3 is due to receive safety training which the Ohio EPA has scheduled. During the visit, Region 5 staff gave state technical staff a brief overview of the new computer program for pressure fall off tests. Ohio EPA staff, overall, needs additional training and occasional help in addressing pressure fall-off tests. The state has money available for training on pressure fall-off tests. Regional staff offered to help the state find an instructor for pressure transient test analysis training. In addition, Region 5 staff discussed plans to hold a 3 - 5 day training session on open-hole log analysis at the Regional Office in Chicago, Illinois. The state expressed interest in attending the session and offered as an alternative suggestion, if training was impossible, that the Region invite companies to bring and discuss their logging tools with staff.

Recommendations/Conclusions: The Region will follow-up as needed to help the state locate an instructor to provide training on pressure transient test analysis. The Region will also update the Ohio EPA on those training opportunities that meet state needs. The Region will offer open-hole logging training on May 2-4, 2000 at our office in Chicago. We encourage the state to send as many UIC technical staff to this training as the state's travel budget permits.

Quality Assurance Management Plan:

Observations/Discussion: Both our agencies are working to have an approved QAMP covering the UIC program by June 30, 2000. The Region has provided comments and await the state's response. The state indicated that they would be in a position to respond some time in March and would have more information on their approach after a planned meeting with state QA and program staff. The state did mention that they need clarification on several items, specifically on who the QA manager should be under the individual UIC program QAMP. Depending on the activity, the QA manager could be the Unit Supervisor or an independent reviewer outside of the program. The Region requested feedback from the state on the QAMP process. Two major observations were that USEPA guidance is too broad, and the state often receives confusing and conflicting messages from USEPA. The state is struggling to meet the Region's QAMP requirements along with other pressing program priorities.

Recommendations/Conclusions: The state needs to respond to the Regional comments on their draft QAMP. Both agencies should make every effort to get an approved UIC QAMP in place by June 30, 2000.

Data Management:

Observations/Discussion: The Ohio EPA manages 12 Class I well files, a Class I well database, and thousands of Class V well records. The state needs to sort a number of Class V wells into the appropriate sub-categories. The state realizes this is a time intensive but necessary effort. The state is continuing efforts to develop a Class V database and get it up and running. The database is key given the number and variety of Class V wells that the state must address. The current inventory is expected to increase and will become more complicated to manage under the new Class V rule. The database will make it easier for the Ohio EPA to sort and review Class V data, and thus, better manage the universe of Class V wells. The state has included ground water data elements, mainly GPS coordinates, in their plans for the database and this will further help the state manage high priority well types.

Recommendations/Conclusions: Overall the state maintains an adequate paper trail of individual well activities. Efforts to develop the Class V database have been ongoing for quite some time. Ohio EPA management should push for support of this effort to complete it. For those Class V wells on the inventory that need to be categorized, state staff will need to field verify whether wells exist, assess potential endangerment, and document accordingly. The approved QAMP should help to further ensure data quality.

State Reporting:

Observations/Discussion: The state timely submits all necessary documentation meeting regional and grant schedules. The Region relies on the state to report program activities mainly through OMB approved 7520 forms, progress reports and/or self evaluations, and well inventory. The Region submits this information to Headquarters to become part of national UIC program data. It is important that the data reported accurately reflects the level of effort for the Ohio EPA UIC program.

The review team discovered some discrepancies on the 7520 forms and the well inventory for FY 1999. Discrepancies with the 7520 forms made it difficult for the Region to follow permitting, compliance, and enforcement activities of the Ohio EPA. For example, the state reported six Class I wells with SNC violations, but only identified five SNC violations (one mechanical integrity SNC violation, and four other SNC violations). As another example, the forms indicate that Ohio EPA issued eight permits for existing Class I injection wells. Our records indicate that out of the12 injection wells, permits for four Class I wells at BP are currently in draft, permits for four wells at Vickery Environmental formerly Waste Management of Ohio formerly ChemWaste

Management are expected to be issued draft in the spring, permits for two wells at AK steel cannot be proposed due to pending non-UIC enforcement actions, and permits for two wells at the Zeneca facility are current and the Ohio EPA issued these permits a few years ago. As for the well inventory, the total count of Class V wells was off by a few wells.

The state indicated, and the Region agrees, that the 7520 forms can be confusing and are difficult to complete overall. In addition, the Ohio EPA was unaware of the current definition of SNC for Class I wells and was treating all Class I violations as SNC. This may have further distorted reported data. The Region provided a copy of the current Class I SNC Redefinition to Ohio EPA. Region 5 staff also agreed to provide a WordPerfect table of the 7520 forms which may help guide the state when completing the 7520 forms. Currently, a National effort is underway to revise the 7520 forms so that programs report more meaningful data and the forms are easier to complete. The state has participated in this effort.

Recommendations/Conclusions: We encourage the state to continue active participation on the National 7520 Revisions Work Group. Until revisions to the 7520 forms are final, the state should continue current reporting mechanisms. The state should be sure to check math on the well inventory numbers. The state should also use the current SNC definition when completing the 7520 forms. Region 5 staff has forwarded the WordPerfect file of the 7520 chart to the state. The Ohio EPA should take steps to ensure that the data reported on the 7520 forms is accurate and contact the Region if there are uncertainties.

Pollution Prevention:

Observations/Discussion: The Ohio EPA UIC Unit coordinates with their Pollution Prevention Office as needed and looks for opportunities to integrate pollution prevention into program activities. Valerie Orr, Class V coordinator, is the UIC representative on a Division workgroup formed to evaluate interaction with customers and integrate pollution prevention into program activities accordingly. The workgroup also serves to facilitate coordination on pollution prevention efforts across programs. The pollution prevention focus on Class V is appropriate because there is more of a need in this area to reduce rather than transfer waste streams due to limited alternatives to and solutions for Class V waste disposal. While the main focus is on Class V, the unit also addresses pollution prevention at Class I facilities. Class I operators submit pollution prevention forms and are on a pollution prevention plans and/or have sought ways to recycle some of the waste stream.

Recommendations/Conclusions: The state is on target and should continue pollution prevention efforts.

Education and Outreach

Education and outreach is a key component of the UIC program, especially for Class V. The state provides information and assistance to the regulated community, internal and external programs and organizations, interest groups, and the general public. They meet with operators to discuss compliance concerns. They field and log phone calls, respond to information requests and requests for assistance, interact with local officials and consultants, and are working to improve the Ohio UIC website. The website will be a key outreach component particularly for Class V with the advent of the new regulations. The state has attended citizen meetings which helps the state to get a community perspective on UIC issues. The state plans to work through the Division Office Liaison to other agencies on outreach initiatives. Initiatives include ways to roll-out new rules and work with the Environmental Health Association on outreach. The state has conducted seminars and outreach projects and distributed printed materials to educate target audiences on improperly managed Class V wells. Ohio EPA staff have also attended a citizens meeting to discuss Vickery Environmental, a Class I facility.

Recommendations/Conclusions: The Ohio EPA has always been strong in this area particularly where it concerns Class V. We look forward to the update on the Ohio UIC webpage. Our agencies can share ideas, outlines, and information on website content.

B. PERMITTING

Class I Facilities

Observations/Discussion (Overall): Ohio EPA, UIC staff reports that there have been few inquiries concerning the construction of Class I wells, with the exception of possible well construction at existing UIC facilities. It appears unlikely, at this time, that the State will receive additional permit applications for new wells. The review focused mainly on permitting needs for existing wells. Our review did not uncover any wells in the area of review or wells drilled to depths of concern, deficient in closure, or requiring corrective action, consistent with Ohio EPA's findings. The review team looked at several well files which are discussed below.

Overall, it is evident that the Ohio EPA has a solid, comprehensive permitting program. The state consistently provides copies of draft permits to the appropriate Region 5 staff and keeps the Region involved and abreast of permit activities. The Ohio EPA uses USEPA and regional guidance, particularly MIT guidance, where applicable, and increases requirements where needed. The state oversees well closures and had one in 1999. The closure complied with approved rule permit and closure plan requirements and will reduce the permitting workload. The Ohio EPA encourages pollution prevention, waste minimization and treatment and includes the respective language in the Class I permits. The Ohio EPA is in the process of contracting to have the seismic reflection survey from the various Class I UIC facilities transferred from tapes

to CD Rom which will save space and better preserve data. The permitting program has been very active.

Observations/Discussion (BPCI): On January 4, 2000 Ohio EPA issued draft permits for the four Class I wells at BP Chemicals, Inc. The permit addresses changing conditions at the BPCI facility. The company intends to add an additional line and there is some concern about disposal capacity due to continued pressure increases. The changes in injected volumes and waste constituents are not expected to be very significant due to increased efficiency. The Ohio EPA held a public meeting on February 10, 2000 regarding the BPCI permits and received no adverse comments. Our review of the draft permits for the BPCI facility uncovered no immediate environmental concerns but had questions regarding compatibility and reaction of the old waste stream with the new catalyst and potential corrosion of the injection zone as a result. The permit process is still in stages where the Ohio EPA can raise this issue and request more data if needed. The state agreed to investigate this matter and get back to U.S. EPA. The Ohio EPA expects to finalize these permits very soon.

Observations/Discussion (AK Steel): The AK Steel facility is operating under expired permits because unresolved, non-UIC environmental violations exist. Ohio law prevents the issuance of permits in such a situation.

Observations/Discussion (Cargill): In October, 1999, Cargill plugged the Class I well which Akzo Nobel had used to dispose of seep water in its underground salt mine. The well had been operated on an expired permit by Akzo for several years because of unresolved UIC enforcement issues. Before it was plugged, the well was logged using temperature, cement bond, and casing inspection logging tools. Based on log results, the casing appeared to be in very poor condition, the cement appeared to be intact although the returns were a little fuzzy, and the temperature log did not indicate any leakage either upward or out of leaks in the casing. The Ohio EPA has determined that there is no evidence of ground water contamination caused by the injection well and no further action is required. This determination is consistent with our findings.

Observations/Discussion (Vickery Environmental): The existing permits for the four wells at Vickery Environmental (formerly Waste Management of Ohio) expired on July 5, 1999. Chuck Lowe is working to reissue these permits and drafts should be available in April, 2000. The name of the facility will be changed to Vickery Environmental, Inc. some time after March 31.

The facility has had no violations during the year, and the Ohio EPA continues to investigate anomalies which Ohio EPA staff identified in late 1997 from temperature logs. These anomalies indicated potential fluid movement out of the injection zone. In early 1998, Ohio EPA and Waste Management of Ohio agreed on a process for additional testing to investigate the anomalies. A series of temperature logs were run in 1998 and did not show any apparent recent upward fluid movement. In 1999, additional testing was conducted, which seemed to indicate no

apparent fluid movement out of the injection zone. The question of timing of waste movement was not unequivocally demonstrated. The situation continues to be monitored for possible problems.

Recommendations/Conclusions: Technical exchange with Region 5 in this area has proved to be valuable and we look for this to continue. The Ohio EPA runs a conscientious Class I permitting program and produces high-quality permits. Because the Agency has sufficient Class I resources, it is usually possible for permits to be issued timely, although circumstances may prevent this. The Ohio EPA permits meet technical and regulatory standards, set adequate conditions, and define compliance expectations. The Region looks forward to receiving draft permits for the Vickery facility. The Ohio EPA provided comments to U.S. EPA which clarifies the issue of waste stream compatibility at BPCI and sufficiently address Region 5 concerns.

Land Ban Coordination:

Observations/Discussions: The USEPA has issued exemptions from the restrictions placed on the land disposal of hazardous wastes by the Hazardous and Solid Waste Amendments of 1984 to the Resource Conservation and Recovery Act to three facilities operating Class I wells in Ohio. The exemptions contained conditions which are necessary for the demonstrations that the hazardous wastes injected will remain in the injection zones for as long as they remain hazardous. These conditions have been incorporated into the permits issued by Ohio EPA for the exempted facilities. Land ban facilities monitor normal injection well operations and report results to the Ohio EPA. The reporting of information to the Ohio EPA ensure that the demonstrations do remain valid. Ohio EPA has not reported any occurrences which would indicate that the wells at the exempted facilities have operated outside the permit limits.

In addition, periodic sampling and analysis of ground water pressures and chemistry at the Waste Management of Ohio site are required by the exemption and the Ohio EPA permits. Information gathered through the sampling and analysis is provided to Ohio EPA and Region 5. In the past, there have been discussions about the results of the monitoring. It is probably time that both agencies review the accumulated information and determine whether there is evidence of fluid movement out of the permitted injection zone.

Recommendations/Conclusions: Information exchange should continue in this area.

C. Compliance Monitoring/Assistance and Compliance/Enforcement

Compliance Monitoring & Assistance:

Observations/Discussions (General): Ohio EPA routinely reviews the monthly operating reports for the 12 Class I wells, identifies potential permit violations from the monthly operating reports,

and follows up on potential violations identified from their review in a timely manner. An example of this is with the AK Steel situation discussed in this report. The Ohio EPA visits each facility quarterly, witnesses all testing, and continues to conduct very detailed annual inspections of the 12 Class I wells. These inspections include full compliance reviews. The Ohio EPA considers virtually every permit condition. In addition to collecting information in the field, state staff reviews records in the office prior to the inspection to ensure that the inspector is intimately familiar with any recent developments at the facility to be inspected. The inspection includes an interview with the manager in charge of the well's operation to check whether all events which are relevant to the well's operation have been reported. The inspector witnesses complete tests of the monitoring and alarm systems. State staff reviews monitoring records and compares them with reports which the operator has submitted to the Ohio EPA to ensure that periodic reports reflect measured values. The Ohio EPA did not receive any complaints about Class I wells which needed any follow-up. Regarding sampling and quality assurance, the agency has not taken any samples. The Class I facilities have good quality assurance plans for sampling and other data collection activities. The Ohio EPA requires operators to sample the injected waste streams and submit the results quarterly.

Observations/Discussions (MIT): The state is following required test frequencies to determine the mechanical integrity of Class I injection wells. Part 1 for leaks is conducted annually and Part 2 for fluid migration is conducted every 3 years. The Ohio EPA reviews testing plans required by permit prior to testing to assure methods are appropriate. Operators used approved methods and all Class I injection wells passed their mechanical integrity tests. The Ohio EPA field witnessed 100% of mechanical integrity testing.

Recommendations/Conclusions: Field presence is definitely one of the Ohio EPA's strong points. The state is very thorough and diligent in their efforts to monitor injection well facilities for compliance.

Compliance and Enforcement:

Observations/Discussions (General): The review team looked at several Class I well files including inspection results, monitoring reports, and enforcement actions. For violations identified during compliance monitoring activities, the Ohio EPA generally resolved the identified violations with either a telephone call with notes documented in the file, or combined notice of violation and return to compliance letter without penalties. The Ohio EPA lacks unilateral penalty authority for monetary deterrence at this level. The review team was unable to determine escalated enforcement activity beyond notice of violation. Two companies showed patterns of repeat non-compliance. The specific details follow.

Observations/Discussion (AK Steel): Ohio EPA has informed AK Steel on three instances over the past year that there were problems with the monthly operating report data that AK Steel

submitted to the Ohio EPA, specifically the September 1998, November 1998, and July 1999 monthly operating reports. AK Steel certified in their September 1998 monthly operating reports that a power failure occurred from 10:30 p.m. on September 26, 1998, to 2:30 a.m. on September 27, 1998, but they maintained positive annulus pressure differential greater than 50 psi on well #2 during the outage. During a telephone conversation between Ohio EPA and AK Steel on October 27, 1998, AK Steel also reported that due to the other problems created with the power outage, AK Steel did not have anyone in the wellhouse to check the wells per AK Steel's backup procedures.

During a semiannual inspection at AK Steel on November 17, 1998, the Ohio EPA reviewed the circle charts for well #2 covering a power outage. This review indicated that, based on the circle charts, the annulus pressure was at 0 psi for at least 15 minutes on September 27, 1998.

During a telephone conversation on January 4, 1999, AK Steel stated that they believed that the pressure differential had been maintained because past history showed that the well goes on a vacuum and that the annular fluid column had been maintained. On January 7, 1999, AK Steel submitted a calculation to Ohio EPA which AK Steel said shows that a positive pressure differential was maintained during the power outage on September 26 and 27, 1998. This mathematical calculation was based upon AK Steel's most recent pressure fall-off test and demonstrated the probability that the minimum pressure differential was greater than 50 psi during the power outage.

On January 13, 1999 Ohio EPA sent a letter to AK Steel stating that despite the apparent loss of annulus pressure, there was no threat to the environment because company personnel verified that injection had ceased, the well was shut in, and a positive pressure differential was maintained.

On January 4, 1999, Ohio EPA contacted AK Steel by telephone in reference to questions on the 11/98 monthly operating reports. Injectate volumes for both wells did not agree. The injectate volumes were quoted in two different places in the report with two different numbers for volumes. AK Steel in turn submitted corrected monthly operating reports.

On September 8, 1999, Ohio EPA contacted AK Steel by telephone in reference to the July, 1999 monthly operating reports. MIT testing dates were wrong, and measurements on the summary sheet indicate that the wells were off, but other data shows injection. AK Steel provided a corrected report containing the correct MIT dates, and an explanation that summary sheets were a snapshot in time and not intended to indicate a total activity picture, that is what the data sheets are for.

Observations/Discussion (BP Chemicals): BP Chemicals Inc. reported three instances over a period of seven months, in which the pressure differential between the annulus system and the

injection tubing fell below the required 50 psi differential. The specific causes were different from each other, but the failure of maintenance workers to maintain the differential was responsible for the violations in each case. Ohio EPA responded in the first two cases by issuing combined notices of violation and return to compliance letters because these seem like isolated instances which were quickly remedied. The third violation occurred on December 28, 1999, and no action had yet been taken. BPCI has told the Ohio EPA that it is exploring ways to prevent future violations of this kind. The Ohio EPA strongly recommended additional training for maintenance workers and other pertinent company staff and requested that BPCI submit staff qualifications.

Recommendations/Conclusions: In general, from the files reviewed, the rate of compliance among Class I permitees appears to be high. As discussed in the State reporting section, it is hard to determine general compliance rates, though, due to the inconsistencies identified in the 7520 reports submitted by the Ohio EPA.

In the case of AK Steel, the lack of adherence to AK Steel's backup procedures during the September 1998 power outage, as well as the apparent pattern of inaccuracies in the monthly operating reports for the months of September 1998, November 1998, and July 1999 deserves some attention. If such inaccuracies continue to occur, the OEPA should implement an escalated enforcement response, with possible stipulated penalties if appropriate.

In the case of the violations at BP Chemicals, the three repeat violations which occurred over a period of seven months did not cause any endangerment of the environment but does deserve some additional attention as well. BP management has indicated to the Ohio EPA that it is taking steps to reduce the possibility of recurrence. If such repeat violations continue to occur, then the Ohio EPA should implement an escalated enforcement response, with possible stipulated penalties if appropriate.

Close attention is needed by the Ohio EPA to ensure that repeat non compliance patterns like the ones identified above are dealt with in an appropriate manner, and in accordance with their enforcement response policy. Region 5 is willing to assist the Ohio EPA with Federal enforcement at AK Steel, or BPCI, if necessary, and encourages the Ohio EPA to call upon us for enforcement actions at any Class I or Class V facility.

D. CLASS IV/V

1. Class IV

Observations/Discussion: State staff works in concert with other programs and district offices to help identify and address Class IV well situations. These programs include the Division of Emergency Response and Remediation (DERR) regarding remedial activities and the Division of

Hazardous Waste Management on Class IV wells. The state has not reported any new Class IV well cases.

Recommendations/Conclusions: The cross communication with DERR and district staff is essential in dealing with Class IV wells. We expect the state will continue these efforts.

2. Class V

Class V Activities:

Observations/Discussion: The Ohio EPA Class V coordinator, Valerie Orr, is renowned nationally for her work in Class V and has done exceptionally well with the limited resources available for Class V. Ms. Orr provided valuable support and brought program experience to the development of the new Class V rule. We commend her outstanding performance.

The Ohio EPA added 918 Class V wells to their inventory during FY 1999 and part of FY 2000. A citizen complaint regarding the City of Trenton led to the identification of 400 stormwater drainage wells in this area. Industrial wells and complaint investigations are top priority for the state in doing Class V inspections. The state plans to prioritize wells for future action and will work with other divisions to focus on industrial wells and other wells which threaten USDWs. The state has issued area permits for remedial Class V wells and closed nine Class V wells in August (eight of which were automotive). The state has issued NOVs without penalty for Class V inventory requirements mainly in dealing with small entities with no resources. The state sends permit or close letters to Class V well facilities identified that have not submitted well inventory. The state has trained and informed district staff about Class V. The Unit coordinates with source water assessment and protection staff on needed inventory, assessment and enforcement actions in the vicinity of public water supplies. The state reviews closure plans for Class V wells and witnesses closures as resources allow. Through an MOA, the Surface Water Division must notify the UIC Unit of any wells identified and provide a current inventory of large septic systems. The Region gave the Ohio EPA a draft of the Class V strategy as a blueprint of where the Region is headed with Class V implementation.

Spring Valley Frontier Camp Ground/Caesar's Lake Mobile Home Park:

Observations/Discussion: These adjacent facilities, located in Warren County, near Dayton, Ohio, have endangering Class V wells used for domestic wastewater/sewage disposal. The Class V wells are located in proximity to the drinking water wells for these facilities. Both facilities have their own public water supply well of which both have exceeded MCLs for nitrates. In addition to the Class V wells, the Ohio EPA indicated that other potential sources of nitrates are located near the drinking water wells. These other sources include a bulk fertilizer plant, sewage sludge application fields, and fertilizers used on or stored on adjacent farm fields. Spring Valley

Frontier Camp Ground received an emergency loan to construct a new drinking water well. The sites are located along the East Fork of the Little Miami River, are in a sole source aquifer area, and mainly services elderly and at a minimum visiting children. The plume from the Class V wells took 30 years to move 100 feet deep and 200 feet out and may still be moving. Ohio EPA Ground Water staff conducted a detailed investigation as to the potential cause for the MCL exceedances in 1994 but the data was inconclusive. The geology of the area consists of sand and gravel glacial outwash overlying Upper Silurian Bedrock.

While the Southwest District Office of the Ohio EPA have been aware of problems at the facility since 1994, the UIC Unit did not become aware of the problem until 1998, and then began to address it. The state notified the facilities about UIC requirements and requested information regarding such items as discharge rates, system design, and waste constituents. Most of the information has been obtained and the UIC Unit is coordinating with the Division of Surface Water to help the Class V well owners find alternatives for waste disposal. The owners have joined efforts in their attempts to comply with UIC requirements. The UIC Unit is looking at good faith effort and met with the facilities and their contractors on February 10, 2000 to find a solution along with other pertinent Ohio EPA district and Division of Surface Water staff. Finding the best solution for this situation may not be easy. The amount of fluid injected into all the endangering Class V wells is a total of 10 to 15 thousand gallons per day. There are issues with both the capability of receiving streams to accept any surface discharge due to anti-degradation and TMDL standards (the Little Miami River is a scenic river), and the land area which would be required for an alternative land application system. It will be necessary for all parties to work together to find a timely solution that eliminates the ground water contamination without simply transferring the problem to another medium.

Recommendations/Conclusions: Per our request, the Ohio EPA sent an update to Region 5 staff following the state's February 10, 2000 meeting with the facility owners and have since participated on a conference call with Region 5 staff to help to clarify and address U.S. EPA Region 5 drinking water and UIC concerns about the facility. Based on information provided by the Ohio EPA, drinking water concerns at these facilities are being addressed and the Ohio EPA is seeking viable alternative methods of waste disposal for the sanitary wastes. The Region will continue to monitor this situation until more permanent solutions are found. The Region views the Class V wells on site as a threat to the ground water below and should be closed. The fact that these wells are only covered by wooden slats and thus vulnerable to forms of disposal other than the sanitary wastes from the septic system further compound the situation. The Region strongly recommends a tight consent agreement with penalties and an enforceable schedule for these facilities to help ensure a timely resolution.

City of Trenton:

Observations/Discussion: It took 6 months for the city to provide the inventory information requested for all wells they own and operate. The state is following up and getting additional information.

Recommendations/Conclusions: At this time, there appears to be no immediate endangerment to USDWs from the wells owned by the city of Trenton.

New Class V Rule Adoption:

Observations/Discussion: Even though the new regulations provide additional new standards, the Ohio EPA wants to be careful not to adopt Class V rules in a vacuum. Coordination is essential and should be established. The state has been looking at the new Class V rules and is putting together a first draft that incorporates new Class V rules into the Ohio Administrative Code. In addition to adding the new Class V requirements, the Ohio EPA is deleting Class I and IV well provisions allowing operation of the wells by rule. These provisions have been non-applicable for almost 16 years and need to be removed to prevent any confusion. The Ohio EPA will also add a rule requiring Class I well permit applicants to provide the results of a seismic reflection survey with the permit-to-operate. This new rule is required by Ohio law. The Ohio EPA will also consolidate present Class V provisions into fewer rules to provide less confusion to the regulated public. John Taylor gave an update on the new Class V rule and discussed future direction for Phase II where focus may be on industrial wells. We discussed the role of the Department of Public Health in the regulation of large septic systems, cesspools, and drain fields which the rule clearly establishes as Class V wells. The Ohio EPA has reviewed the proposed Ohio Department of Health rules for home sewage systems and recommended the banning of cesspools be included with those rules for systems serving two and three family residences. Ohio EPA recommended the cesspool ban language within the Federal rule with all relevant definitions. An MOU with the Department of Health appears necessary. For those systems where the Ohio Department of Public Health, usually through County Health Departments, has no jurisdiction, authority falls with the surface water/waste water program. The Ohio EPA Division of Surface Water reviews systems with a capacity of 20 or more, mainly semi-public commercial or non-residential. Whatever approach the Ohio EPA chooses, the state will need to thoroughly outline and document who will regulate what and how in the rule adoption package. A flow-chart of who will regulate what systems is recommended. The Ohio EPA may soon have an opportunity review the Department of Health's home sewage rules which may impact Class V. Comments are due the first week in February. The Ohio EPA wants to be sure all affected rules make it clear which types of systems are banned. The Region will host training on the new regulations and primacy package updates in February. Key Class V staff will attend as well as a representative for the Ohio ground water/source water program. Health Departments are welcome at the training. The UIC Unit gave a presentation to the State Coordinating Committee

on Ground Water which included county officials but it still is good for USEPA to extend an invitation.

Recommendations/Conclusions: The Region commends the Ohio EPA for their efforts to date to update their entire primacy package. The work completed to date should provide an excellent framework to which the portions related to the new Class V Rule can be added. We appreciate the challenge that Ohio EPA will face in integrating the efforts of the various state programs, including those of the Ohio Department of Health, to assure that all Class V wells are effectively regulated in accordance with both existing regulations and the new Class V Rule. We will be willing to provide assistance to you in this effort, via phone calls or meetings as necessary, to help assure that this process is completed by the December 29, 2000 deadline.

State Implementation Plans for the New Class V Rule:

Observations/Discussion: The state plans to take a county by county approach, look at existing information to see what's available, and then go door-to-door in wellhead protection areas as a start to implementation of the new Class V rule. The closer counties are more feasible given resources. As such, the state plans to begin implementation in Fairfield County as a pilot to determine what approaches work best for efficiency. The Ohio EPA will then move to Pickaway and Greene counties. Lake County will be done last due to geology. Headquarters will provide a draft Class V implementation guide at the February 28, 2000 Class V training which should help the state further develop their plan.

When implementing new regulations, other state rules should be complied with and the Ohio EPA should use authorities granted under existing rules when the rules are more stringent. As an example, the new rule sets a maximum of 5 years for cesspool owners to close their wells but this maximum is not automatic and does not exempt any cesspool owner from the non-endangerment provision of the Safe Drinking Water Act. Consequently, the state must move to close any cesspool immediately using existing authority if it is endangering underground sources of drinking water.

Regulating endangering Class V wells, particularly cesspools and dry wells will be a major challenge in Ohio. This is particularly true since state law currently does not ban cesspools and alternatives for drainage and disposal are limited due to regional geology. Sewer systems, for example, are very expensive and may not be feasible. The increasing number of systems identified where there are no clear solutions are examples of the types of situations that the state will face across the state as they implement new as well as existing Class V regulations. The Ohio EPA will need to include various other programs as they seek permanent solutions and alternatives that are environmentally sound and compliant across programs. In addition, various Ohio EPA offices and other agencies will potentially have the lead depending on the size and nature of the system. This is due to the multi-media nature of the Class V well program. Thus,

maximum coordination is necessary as highlighted in the Spring Valley Frontier Campground and Caesar's Lake Mobile Home Park case.

Recommendations/Conclusions: The Region will look for the state to address resource prioritization needs in the program description as part of the primacy package update. Overall, the Ohio EPA will need to make it a priority to close large capacity cesspools and close or permit motor vehicle disposal wells, once the rule becomes effective for those wells subject to the rule. The Ohio EPA will also need to close any of these wells immediately if they are endangering no matter the circumstances.

Cross Program Coordination:

Observations/Discussion: The Ohio EPA needs to develop a method to get Class V information from the source water program and has established a link with the districts and the Rural Water Association who will do delineations. For example, UIC Unit staff accompanied Kristy Hunt, an Ohio EPA source water staff member, to observe source water field activities in New Carlisle. Regular staff meetings with key staff also present opportunity to figure out how to tap into SWAP and get sampling data early in the process. Coordination will avoid surprise results in obvious areas with Class V. MOAs are immediately obvious to assure coordination occurs. As another example, State UIC staff attend monthly meetings of the state coordinating committee on ground water on an as needed basis to discuss impending UIC issues. Recently, UIC Unit staff gave the committee a presentation on the new Class V rules. Any coordination between the Ohio EPA and other state agencies on UIC issues will probably be initiated via this committee.

The UIC Unit will also need to coordinate with the Division of Surface Water on several areas, especially where it concerns cesspools and other disposal systems that fall under the new Class V regulations. The UIC Unit, under MOA, currently consults with surface water staff on ground water protection concerns for systems they approve but more coordination is needed. For example, the UIC Unit will need to consult with surface water staff to be informed about alternatives to banning cesspools when helping operators to comply. Also, dealing with beauty shops, commercial or industrial septic systems as well as non-commercial floor drains could be specific areas that need to be addressed through coordination between the two programs.

Surface water, wastewater, and source water protection staff must pull together with UIC staff to meet Class V rule requirements. Coordination with the pollution prevention office will also be key to finding solutions and alternatives and for dealing with small businesses. The Ohio EPA UIC program staff have attempted to bring all key parties to the table and will meet with other programs sometime in March to discuss cross program issues.

Recommendations/Conclusions: Coordination with source water assessment program staff is key. Dealing with cesspools and other Class V systems which involve some type of wastewater